

## WHAT IS CLAIMED IS:

1           1.   For use in a network interface controller, a  
2 power and power management signaling control system  
3 comprising:  
4           a voltage regulator;  
5           a first connection coupled to the voltage  
6 regulator for connection to a network-initiated power  
7 management recovery signal and a power management  
8 recovery bus signal; and  
9           a second connection coupled to the voltage  
10 regulator for selective connection to a motherboard  
11 header,  
12           wherein the control system is operable to  
13 provide power to a network interface card and power  
14 management signals, if necessary, within each of systems  
15 not supporting network-initiated power management  
16 recovery, systems supporting network-initiated power  
17 management recovery through the header, and systems  
18 supporting network-initiated power management recovery  
19 through the power management recovery bus signal.

1           2.    The control system according to claim 1,  
2 further comprising:

3               a third connection coupled to the voltage  
4 regulator for connection to an auxiliary power bus  
5 signal,

6               wherein the control system is operable to  
7 provide auxiliary power to the network interface card  
8 within systems not providing auxiliary power, within  
9 systems providing auxiliary power from the header, and  
10 within systems providing auxiliary power from the  
11 auxiliary power bus signal.

1           3.    The control system according to claim 2,  
2 wherein grounding of the auxiliary power bus signal does  
3 not affect provision of auxiliary power to the network  
4 interface card by the control system.

1           4.    The control system according to claim 1,  
2 further comprising:

3               an inverter inverting the network-initiated  
4 power management recovery signal to the header.

1           5.    The control system according to claim 1,  
2 further comprising:

3                   an inverter gating auxiliary power for the  
4 network interface card to main power for the network  
5 interface card when a bus power signal is asserted and  
6 disconnecting the auxiliary power from the main power  
7 when the bus power signal is not asserted.

1           6.    The control system according to claim 1,  
2 further comprising:

3                   diodes preventing back powering of a bus to  
4 which the control system is coupled during hibernate  
5 states, system power short circuiting of and leakage  
6 malfunctions in the control system when the header is  
7 incorrectly connected or unconnected to the motherboard,  
8 and auxiliary power shorts to ground when an auxiliary  
9 power bus signal coupled to the control system is  
10 grounded.

1           7.    The control system according to claim 1,  
2 wherein the control system is operable within systems  
3 that do not provide 3.3V power to provide 3.3V power from  
4 the voltage regulator.

1           8.    A network interface controller comprising:  
2                   connections for selectively coupling the  
3 controller to a network interface card adapted for  
4 installation within a Peripheral Component Interconnect  
5 (PCI) bus slot; and  
6                   a power control circuit coupled to the  
7 connections, the control circuit comprising:  
8                   a first connection coupling a voltage  
9 regulator to a network-initiated power management  
10 recovery signal and a power management recovery bus  
11 signal; and  
12                   a second connection selectively coupling  
13 the voltage regulator to a motherboard header,  
14                   wherein the controller is operable to  
15 provide power to the network interface card within  
16 any of systems not supporting network-initiated  
17 power management recovery, systems supporting  
18 network-initiated power management recovery through  
19 the header, and systems supporting network-initiated  
20 power management recovery through the power  
21 management recovery bus signal.

1        9. The controller according to claim 8, further  
2 comprising:

3            a third connection coupling the voltage  
4 regulator to an auxiliary power bus signal,

5            wherein the control circuit is operable to  
6 provide auxiliary power to the network interface card  
7 within systems not providing auxiliary power, within  
8 systems providing auxiliary power from the header, and  
9 within systems providing auxiliary power from the  
10 auxiliary power bus signal.

1        10. The controller according to claim 9, wherein  
2 grounding of the auxiliary power bus signal does not  
3 affect provision of auxiliary power to the network  
4 interface card by the control circuit.

1        11. The controller according to claim 8, further  
2 comprising:

3            an inverter inverting the network-initiated  
4 power management recovery signal to the header.

1        12. The controller according to claim 8, further  
2 comprising:

3            an inverter gating auxiliary power for the  
4 network interface card to main power for the network  
5 interface card when a bus power signal is asserted and  
6 disconnecting the auxiliary power from the main power  
7 when the bus power signal is not asserted.

1        13. The controller according to claim 8, further  
2 comprising:

3            diodes preventing back powering of a bus to  
4 which the control circuit is coupled during hibernate  
5 states, system power short circuiting of and leakage  
6 malfunctions in the control circuit when the header is  
7 incorrectly connected or unconnected to the motherboard,  
8 and auxiliary power shorts to ground when an auxiliary  
9 power bus signal coupled to the control circuit is  
10 grounded.

1        14. The controller according to claim 8, wherein  
2 the control circuit is operable within systems that do  
3 not provide 3.3V power to provide 3.3V power from the  
4 voltage regulator.

1           15. For use in a network interface controller, a  
2 method of power and power management signaling control  
3 comprising:

4                 providing a single voltage regulator coupled to  
5 a network-initiated power management recovery signal and  
6 a power management recovery bus signal and selectively  
7 coupled to a motherboard header; and

8                 operating a control system for the voltage  
9 regulator to provide power to a network interface card  
10 and power management signals, if necessary, independent  
11 of whether the controller is installed within a system  
12 not supporting network-initiated power management  
13 recovery, a system supporting network-initiated power  
14 management recovery through the header, or a system  
15 supporting network-initiated power management recovery  
16 through the power management recovery bus signal.

1        16. The method according to claim 15, further  
2 comprising:

3                coupling the voltage regulator to an auxiliary  
4 power bus signal; and

5                operating the control system to provide  
6 auxiliary power to the network interface card independent  
7 of whether the controller is installed within a system  
8 not providing auxiliary power, a system providing  
9 auxiliary power from the header, or a system providing  
10 auxiliary power from the auxiliary power bus signal.

1        17. The method according to claim 16, further  
2 comprising:

3                providing auxiliary power to the network  
4 interface card independent of whether the auxiliary power  
5 bus signal is grounded.

1        18. The method according to claim 15, further  
2 comprising:

3                inverting the network-initiated power  
4 management recovery signal to the header.



1        19. The method according to claim 15, further  
2 comprising:

3            gating auxiliary power for the network  
4 interface card to main power for the network interface  
5 card when a bus power signal is asserted; and

6            disconnecting the auxiliary power from the main  
7 power when the bus power signal is not asserted.

1        20. The method according to claim 15, further  
2 comprising:

3            preventing back powering of a bus to which the  
4 control system is coupled during hibernate states;

5            preventing system power short circuiting of and  
6 leakage malfunctions in the control system when the  
7 header is incorrectly connected or unconnected to the  
8 motherboard; and

9            preventing auxiliary power shorts to ground  
10 when an auxiliary power bus signal coupled to the control  
11 system is grounded.